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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/725,222 | 12/01/2003 | Edward Keith Willis | 038712/272022 | 2134 |
| 826 | 7590 | 03/10/2005 | EXAMINER | |
| ALSTON & BIRD LLP BANK OF AMERICA PLAZA 101 SOUTH TRYON STREET, SUITE 4000 CHARLOTTE, NC 28280-4000 | | | TORRES VELAZQUEZ, NORCA LIZ | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1771 | |

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,222

Applicant(s)

WILLIS ET AL.

Examiner

Norca L. Torres-Velazquez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 41504 60704.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the citizenship of each inventor.

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 10 and 12-15 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure, which is not enabling. The non-circular fibers in the second air permeable layer are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The second air permeable layer as claimed in claim 10 does not require the filaments to have a non-circular cross section as required by the disclosure on page 6, lines 21-30.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

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5. Claims 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 3 recites the limitation "said at least one additional nonwoven layer" in line 2. There is insufficient antecedent basis for this limitation in the claim. Are Applicants' referring to the second air permeable nonwoven layer? Claim 5 is dependent on "claim 5" (itself). For examining purposes, the Examiner assumes that it depends on claim 4. It is also noted that the claim (if dependent on claim 4), should read - -said spunbond fabrics have a basis weight...- - instead.

Claim Rejections - 35 USC § 102/103

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by BRAUN et al. (US 4,778,460).

BRAUN et al. disclose a multilayer nonwoven fabric that comprises at least two layers of nonwoven web. Each nonwoven web comprises a plurality of monofilaments of a thermoplastic material. In at least one of the webs the monofilaments have a bilobal cross-section. The fabric can include two layers of nonwoven web with the monofilaments of the first web having a bilobal cross-section and the monofilaments of the second web having a trilobal or branched cross-section. (Abstract) The reference teaches that the thermoplastic material of each web can

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be either the same or a different material from that of the other web. Each thermoplastic material must be capable of being spun into monofilaments. The reference teaches the use of polyester. (Col. 4, lines 57-64) It is noted that the reference discloses that the nonwoven fabric is intended as a cloth substitute in applications such as surgical gowns. (Col. 1, lines 21-23) It is the Examiner's position that the nonwoven webs of Braun et al. would inherently be air permeable.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7, 8, 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN et al. (US 4,778,460).

While the preferred embodiment of BRAUN is a two-layer nonwoven composite, the reference discloses a multilayer nonwoven fabric that comprises at least two layers of nonwoven web. (Abstract) Therefore, it would have been obvious to one of ordinary skill in the art to have a three-layer nonwoven composite of the invention of BRAUN et al. motivated by the desire of increasing the tensile strength or tear resistance of the material. It is noted that BRAUN et al. discloses that these properties are important area in the improvement of the web. (Col. 1, lines 29-31)

11. Claims 2, 6, 9, 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN et al. (US 4,778,460) as applied above, and further in view of LARGMAN et al. (US 5,057,368).

While BRAUN et al. discloses a composite nonwoven fabric with a layer comprised of fibers having a first non-circular cross section and another layer comprised of fibers having a second non-circular cross section which is different from the first non-circular cross section, the first non-circular cross section of BRAUN et al is bilobal and the second non-circular cross section is trilobal. BRAUN et al. fails to teach the combination of a trilobal and four or more lobes cross-section in the respective layers of the composite.

LARGMAN et al. relates to fibers having at least about three lobes which are useful in applications such as filtering, particularly trilobal and quadrilobal fibers. (Col. 1, lines 7-11 and Col. 4, lines 10-11) The reference teaches that such fibers exhibit high loft and reduced tendency to pack. The fibers are also useful as fluid filter medium and exhibit high efficiency and high capacity for removal of entrained solid particles from fluid streams. (Col. 3, lines 44-48) It is noted that Largman et al. teaches fibers with a 3 denier. (Examples)

Since both references are directed to nonwoven webs made from non-circular cross section fibers, the purpose disclosed by LARGMAN et al. would have been recognized in the pertinent art of BRAUN et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the layer including bilobal cross section fibers and substitute these for quadrilobal fibers with the motivation of providing a nonwoven with fibers that exhibit high loft and reduced tendency to pack that are useful as fluid filter medium and also exhibit high efficiency and high capacity for removal of entrained solid particles from fluid streams as disclosed by LARGMAN. (Col. 3, lines 44-48).

12. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN

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et al. (US 4,778,460) and LARGMAN et al. (US 5,057,368), and further in view of ORTEGA et al. (WO 00/15891)

ORTEGA et al. discloses spunbonded nonwoven fabrics with multilobal filaments with deniers form about 5 to 12 dpf, and a weight between 0.2-7 ounces per square yard and with filaments with at least two different denier sizes (Page 4, lines 3-8, 16, 21-23, 27-28) The reference discloses that fabrics with trilobal filaments are permeable and can be used alone in filtration applications or as a coarse layer in a composite filter. (Page 5, lines 24-25)

Since the references are directed to nonwoven webs made from non-circular cross section fibers, the purpose disclosed by ORTEGA et al. would have been recognized in the pertinent art of BRAUN et al. and LARGMAN et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the webs and provide with them a basis weight between about 0.2 and about 7 ounces per square yard with the motivation of producing a nonwoven fabric with high air permeability and open space as disclosed by ORTEGA et al. (Page 4, lines 21-23)

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN et al. (US 4,778,460) and LARGMAN et al. (US 5,057,368), and further in view of MURPHY, Jr. (US 5,820,645).

MURPHY, Jr. discloses a composite nonwoven fabric suitable for undergoing pleating to form filtration media that includes two nonwoven fabric layers which are adhesively bonded. One layer is an air permeable nonwoven web of continuous filaments. A high loft nonwoven batt of staple fibers is laminated to the nonwoven web layer. The nonwoven batt has a gradient fiber density and includes a first layer of relatively low denier fibers and a second layer of

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relatively higher denier fibers. (Abstract) The nonwoven batt 14 may additionally include a transition layer 24 located between the interior and exterior layers 22 and 26. (Col. 4, lines 34-43) The fibers of the nonwoven batt 14 may be conventional circular cross-section. Alternatively, by using noncircular cross-section fibers, such as trilobal cross-section fibers, the fiber surface area can be increased, thus allowing for increasing the filtration efficiency for a given basis weight batt, or allowing for using a reduced basis weight batt while maintaining comparable filtration efficiency. (Col. 5, lines 6-12)

Since MURPHY et al. also relates to non-circular fibers, the purpose disclosed by MURPHY et al. would have been recognized in the pertinent art of BRAUN et al. and LARGMAN et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the denier of the filaments in the fabric and provide with a gradient in denier size between the layers with the motivation of achieving desirable filtration properties as disclosed by MURPHY et al. (Col. 4, lines 22-26)

Allowable Subject Matter

14. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claim 16 is allowed.

16. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fail to teach a nonwoven fabric of the present invention in which the filaments

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of the first and second layers have a trilobal cross section and an intermediate layer of filaments with a quad-lobal cross section.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4,908,052 US 5,397,632 US 6,613,704 B1 US 6,649,547 B1
US 6,815,383 B1

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 571-272-1484. The examiner can normally be reached on Monday-Thursday 8:00-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Norca L. Torres-Velazquez
Examiner
Art Unit 1771

March 6, 2005